

PATENT CLAIMS

1. A load cell comprising a force transducer for recording a weight, the force transducer comprising a part which does not deform under loading and a force introduction part with an elastically deformable part, the elastically deformable part and the non-deforming part each comprising a measuring portion, the measuring portions defining a spaced relationship of the elastically deformable part and the non-deforming part to each other, said spaced relationship changing under loading, at least one of said measuring portions comprising a recess, and a sensor arrangement, the sensor arrangement comprising an inductively operating sensor element and a signaling face, the sensor element being disposed in the recess aligned toward and opposite said signaling face, said sensor element adapted to detect changing of the spaced relationship as an electric signal, the force transducer further comprising a circuit for converting the electric signal into a weighing signal, the sensor element being shielded against external electromagnetic fields and being encapsulated, and wherein the load cell operates on the eddy current principle.
2. The load cell according to Claim 1, wherein the recess is disposed in the non-deforming part of the force transducer and the signaling face is disposed on the elastically deformable part.
3. The load cell according to Claim 1, wherein the recess with the sensor element is cast with a curable material for encapsulation.
4. The load cell according to Claim 1, wherein the sensor element is encapsulated in a separate housing and is disposed with the housing in the recess.

5. The load cell according to Claim 4, wherein the recess is a bore and has a stop for exact positioning of the sensor element with the housing.
6. The load cell according to Claim 4, wherein the recess is a bore and wherein the housing of the sensor element has a stop for the exact positioning within the bore.
7. The load cell according to Claim 6, wherein the stop is formed as a collar protruding from the housing.
8. The load cell according to Claim 5, wherein the housing comprises a substantially cylindrical shape and comprises an external thread on the cylindrical shape, and wherein the bore of the recess comprises an internal thread complementary to said external thread.
9. The load cell according to Claim 1, wherein the sensor element comprises a sensor coil disposed in a ferrite core, the ferrite core comprising an open end facing the signaling face.
10. The load cell according to Claim 9, wherein the ferrite core is formed as at least one of a cup core, an E core and a U core comprising said open end.
11. The load cell according to Claim 1, wherein the force transducer further comprises a frame, the elastically deformable part and the non-deforming part being fixed to the frame and being produced in one piece from a metallic material.
12. The load cell according to Claim 11, wherein the metallic material is a hardenable lightweight metal alloy.

13. The load cell according to Claim 1, wherein the circuit comprises an oscillator circuit associated with the sensor element, the oscillator circuit optionally being disposed alongside the sensor element and in the recess together with the sensor element in an encapsulated manner.
14. The load cell according to Claim 13, wherein the sensor element is a frequency-determining part of the oscillator circuit.
15. The load cell according to Claim 1, wherein the signaling face comprises a composite ferrite-polymer sheet.
16. The load cell according to Claim 1, wherein the non-deforming part of the force transducer comprises a mechanical stop for limiting the deformation of the elastically deformable part of the force introduction part.
17. The load cell according to Claim 16, wherein the force transducer comprises a mechanical stop for limiting the deformation of the elastically deformable part when compressive and tensile forces act on the force introduction part.
18. The load cell according to Claim 1, wherein the sensor arrangement is disposed and encapsulated in the recess.